

AMENDMENTS TO THE CLAIMS

Please cancel claims 1-29 and add new claims 30-106.

1-29. (Cancelled)

30. A method for treating a patent foramen ovale, comprising:

advancing an implantable device through the vasculature of a subject and into a first atrial chamber of the heart, wherein the atrial septal wall of the heart has a patent foramen ovale characterized by a first tissue flap and a second tissue flap, at least a portion of the first tissue flap overlapping at least a portion of the second tissue flap to define a tunnel therebetween; and

situating the implantable device within a first piercing in the portion of the first tissue flap overlapping the second tissue flap and within a second piercing in the portion of the second tissue flap overlapping the first tissue flap, wherein a first portion of the implantable device engages the first tissue flap in a second atrial chamber of the heart and a second portion of the implantable device engages the second tissue flap in the first atrial chamber of the heart to at least partially close the tunnel.

31. The method of claim 30, further comprising externally or internally imaging the implantable device.

32. The method of claim 31, wherein the implantable device comprises a radiopaque marker and wherein imaging the implantable device comprises externally imaging the radiopaque marker with fluoroscopy.

33. The method of claim 30, wherein advancing the implantable device through the vasculature of a subject comprises advancing the implantable device through the vasculature while the implantable device is within an elongate delivery apparatus.

34. The method of claim 33, wherein situating the implantable device comprises transitioning the first portion of the implantable device to a retaining configuration to retain the first portion against the first tissue flap.

35. The method of claim 34, wherein the implantable device further comprises an intermediate portion between the first portion and the second portion.

36. The method of claim 35, wherein the first portion of the implantable device is an elongate portion coupled with the intermediate portion of the implantable device such that the elongate portion is pivotable between a first configuration suitable for housing within the delivery apparatus and the retaining configuration.

37. The method of claim 36, wherein the first portion of the implantable device further comprises a first end configured to pass through tissue, a second end, and an intermediate region located therebetween.

38. The method of claim 36, wherein the first portion of the implantable device further comprises a first end configured to penetrate tissue, a second end, and an intermediate region located therebetween.

39. The method of claim 38, wherein the intermediate region of the first portion is pivotally coupled with the intermediate portion of the implantable device.

40. The method of claim 34, wherein situating the implantable device comprises allowing the second portion of the implantable device to transition to a retaining configuration to retain the second portion against the second tissue flap.

41. The method of claim 34, wherein situating the implantable device comprises securing the second portion to the implantable device in a configuration configured to retain the second portion against the second tissue flap.

42. The method of claim 30, wherein the first portion engages the first tissue flap in a retaining configuration where a longitudinal axis of the first portion lies substantially perpendicular to a longitudinal axis of the portion of the implantable device within the first piercing.

43. The method of claim 42, wherein the first portion is an elongate portion.

44. The method of claim 42, wherein the first portion is an elongate, needle-like portion.

45. The method of claim 30, wherein the first portion comprises a laterally extending member configured to engage the first tissue flap and the second portion comprises a laterally extending member configured to engage the second tissue flap.

46. The method of claim 30, wherein situating the implantable device comprises:

engaging the first tissue flap with the first portion of the implantable device; and
then engaging the second tissue flap with the second portion of the implantable device.

47. The method of claim 46, wherein engaging the first tissue flap with the first portion of the implantable device comprises transitioning the first portion of the implantable device to a retaining configuration configured to retain the first portion against the first tissue flap.

48. The method of claim 46, wherein the second portion of the implantable device comprises retaining arms configured to engage the second tissue flap.

49. The method of claim 46, wherein the second portion of the implantable device comprises at least one laterally extending member configured to engage the second tissue flap.

50. The method of claim 46, wherein the second portion of the implantable device comprises a plurality of laterally extending members configured to engage the second tissue flap.

51. The method of claim 46, wherein engaging the second tissue flap with the second portion of the implantable device comprises allowing the second portion of the implantable device to transition to a retaining configuration configured to retain the second portion against the second tissue flap.

52. The method of claim 51, wherein the second portion of the implantable device is biased towards the retaining configuration.

53. The method of claim 52, wherein the retaining configuration lies substantially in a plane parallel to the second tissue flap.

54. The method of claim 53, wherein the retaining configuration is generally coiled.

55. The method of claim 53, wherein the retaining configuration is a generally "L" shape.

56. The method of claim 53, wherein the retaining configuration is a generally "U" shape.

57. The method of claim 53, wherein the retaining configuration is a generally "Y" shape.

58. The method of claim 53, wherein the retaining configuration is a generally "S" shape.

59. The method of claim 46, wherein the first and second tissue flaps are engaged such that the first tissue flap is held in contact with the second tissue flap to close the tunnel.

60. The method of claim 46, wherein the first portion of the implantable device engages a first septal surface exposed within a second atrial chamber.

61. The method of claim 46, wherein the second portion of the implantable device engages a second septal surface exposed within the first atrial chamber.

62. The method of claim 30, wherein the first atrial chamber is the right atrium and the second atrial chamber is the left atrium.

63. The method of claim 30, wherein the first atrial chamber is the left atrium and the second atrial chamber is the right atrium.

64. The method of claim 63, wherein advancing the implantable device through the vasculature of the subject comprises advancing the implantable device through the inferior vena cava to the heart.

65. The method of claim 30, wherein the first portion of the implantable device comprises a tip configured to pass through tissue.

66. The method of claim 30, wherein the first portion of the implantable device comprises a tip configured to penetrate tissue.

67. The method of claim 66, wherein situating the implantable device comprises advancing the first portion of the implantable device through the second tissue flap to create the second piercing.

68. The method of claim 67, wherein situating the implantable device comprises advancing the implantable device through the first tissue flap to create the first piercing.

69. The method of claim 68, wherein situating the implantable device further comprises advancing the implantable device until the first portion of the implantable device is fully exposed within the second atrial chamber.

70. The method of claim 69, wherein situating the implantable device comprises transitioning the first portion of the implantable device to a retaining configuration configured to retain the implantable device against the first tissue flap.

71. The method of claim 70, wherein the first portion of the implantable device resides substantially flat against the first tissue flap in the retaining configuration.

72. The method of claim 71, wherein the implantable device further comprises an intermediate portion between the first portion and the second portion.

73. The method of claim 72, wherein the first portion of the implantable device is an elongate portion coupled with the intermediate portion of the implantable device.

74. The method of claim 73, wherein situating further comprises pivoting the elongate portion from a first configuration suitable for housing within a delivery apparatus to the retaining configuration.

75. The method of claim 74, wherein the first portion of the implantable device further comprises a first end configured to penetrate tissue, a second end, and an intermediate region located therebetween.

76. The method of claim 75, wherein the intermediate region is coupled with the intermediate portion of the implantable device.

77. The method of claim 70, wherein situating the implantable device comprises allowing the second portion of the implantable device to transition to a retaining configuration to retain the second portion against the second tissue flap.

78. The method of claim 70, wherein situating the implantable device comprises coupling the second portion with the implantable device in a configuration configured to retain the second portion against the second tissue flap.

79. The method of claim 78, wherein the second portion is a locking element.

80. The method of claim 79, wherein the locking element comprises arms.

81. The method of claim 79, wherein the implantable device comprises a filament and wherein the locking element is configured to lockingly engage the filament.

82. The method of claim 81, wherein the filament is a suture.

83. The method of claim 30, wherein the implantable device comprises NITINOL.

84. The method of claim 30, wherein the implantable device comprises stainless steel.

85. The method of claim 30, wherein the implantable device comprises a shape memory material.

86. The method of claim 30, wherein advancing the implantable device through the vasculature comprises advancing an elongate tubular member having a lumen and open distal end through the vasculature with the implantable device housed within the lumen.

87. The method of claim 86, wherein situating the implantable device comprises advancing the implantable device through the distal end of the tubular member with a distal end of an elongate pusher member.

88. The method of claim 87, further comprising advancing the pusher member with an actuator.

89. The method of claim 88, wherein the elongate tubular member has a substantially atraumatic distal tip.

90. The method of claim 89, wherein the distal end of the pusher member is configured to engage the implantable device.

91. The method of claim 90, wherein the pusher member comprises a gripping mechanism for gripping the implantable device.

92. The method of claim 87, wherein situating the implantable device further comprises:

advancing the first portion of the implantable device through the first and second tissue flaps with the pusher member; and

transitioning the first portion of the implantable device to a retaining configuration after the first portion has been advanced through the first and second tissue flaps.

93. The method of claim 92, wherein the first portion of the implantable device comprises a tip configured to penetrate tissue.

94. The method of claim 93, wherein situating the implantable device further comprises allowing a second portion of the implantable device to transition to a retaining configuration after the second portion exits the distal end of the tubular member.

95. The method of claim 86, wherein the implantable device comprises a radiopaque marker.

96. The method of claim 86, wherein the tubular member comprises a radiopaque marker.

97. The method of claim 87, wherein the pusher member comprises a radiopaque marker.

98. The method of claim 30, wherein advancing the implantable device through the vasculature of the subject comprises advancing the implantable device through the inferior vena cava.

99. The method of claim 30, wherein advancing the implantable device through the vasculature of the subject comprises advancing the implantable device through the superior vena cava.

100. The method of claim 30, wherein advancing the implantable device through the vasculature of the subject comprises advancing the implantable device through an artery.

101. The method of claim 30, wherein the first atrial chamber is the right atrium.

102. The method of claim 30, wherein the first atrial chamber is the left atrium.

103. The method of claim 30, wherein situating the implantable device comprises advancing a sharp end of the implantable device through the first tissue flap to create the first piercing.

104. The method of claim 103, wherein situating the implantable device comprises advancing the sharp end of the implantable device through the second tissue flap to create the second piercing.

105. The method of claim 104, wherein situating the implantable device comprises releasing the implantable device while located within the first and second piercings.

106. The method of claim 30, wherein situating the implantable device comprises releasing the implantable device while located within the first and second piercings.